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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHU, KIM KWOK

ART UNIT PAPER NUMBER

2627

DATE MAILED: 12/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/642,674

Applicant(s)

HONG ET AL.

Examiner

Kim-Kwok CHU

Art Unit

2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment filed on 9/29/2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Remarks

1. Applicant's Amendment filed on September 29, 2006 has been fully considered but it is not persuasive.

With respect Claims 1 and 7, Applicant states that the prior art of Son et al. do not discuss "searching a memory in the disc drive for a tilt angle for a recording or reproducing sector of the disc in which the tilt is detected" (page 6 of the Remarks, lines 18 and 19). Accordingly, the prior art of Son teaches a tilt adjusting means where optimum tilt adjustment values are stored in the memory (Figs. 2 and 7; steps S712-S716). When there is a tilt during recording and reproducing, Son's calculated tilt adjustment value is applied to the tilt driving unit to adjust the tilt of the optical pickup to record data (column 7, lines 26-37). Applicant does not agree that Son's calculated tilt adjustment values as illustrated in Fig. 7, step S714 is the claimed tilt angle (page 6 of the Remarks, lines 21 and 22). Accordingly, Applicant's claimed tilt angle is stored in the memory in form of pulses/position information (section 31). Similarly, the prior art of Son's tilt angle also stored in the memory in form of disk position information S_{inner} and S_{outer} (Fig. 7; S706 and S710).

With respect to Claims 3 and 4, Applicant states that the prior art of Son's tilt angle is not searched where the

pickup in currently positioned (page 7 of the Remarks, lines 13 and 14). Accordingly, Son's tilt control value is calculated at the recording position by interpolation (Fig. Step S714). In other words, Son's tilt angle is searched with an interpolation method with respect to the current position of the pickup. The parameters used in Son's search method is stored in the memory as illustrated in Fig. 7, step S706 and S710).

With respect to Claims 5 and 6, Applicant states a similar disagreement as above. In short, Applicant does not agree that the prior art of Son teaches the feature "search a memory for a tilt angle" (page 8 of Remarks, lines 3-5). Accordingly, the prior art of Son stores the disk tilt/position information in the memory similar to Applicant's position information in form of pulses stored in the memory. For controlling the tilting of a recording medium, both Applicant and the prior art of Son calculate (search) a tilting adjustment value based on position information stored in the memory.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

*A person shall be entitled to a patent unless--
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.*

3. Claims 1-6 are rejected under 35 U.S.C. § 102(b) as being anticipated by Son et al. (U.S. Patent 6,42,674).

4. Son teaches a method of correcting a tilt in a disk drive having all of the steps as recited in claims 1 and 2. For example, Son teaches the following:

(a) with respect to Claim 1, detecting a tilt of a disc 11 loaded in the disc drive (Figs. 2 and 7, steps S710); searching a memory 38 in the disc drive for a tilt angle for a recording or reproducing sector of the disc in which the tilt is detected (Figs. 2 and 7, step S712; column 7, lines 22-26); calculating (by interpolation) a tilt angle for the recording or reproducing sector based on the detected tilt of the disc if no tilt angle is found in the memory 38 (Fig. 7, step S714; column 7, lines 31-33); correcting the tilt of the disc (Fig. 7, step S716); storing the calculated tilt angle in the memory so that the calculated tilt angle is used for the recording or

reproducing sector (Fig. 7, step S712); if a tilt angle is found in the memory 38, the tilt of the disc is corrected using the found tilt angle, and if the tilt angle is not found in the memory 38, the tilt of the disc is corrected using the calculated (interpolated) tilt angle (Fig. 7, steps S710-S716).

(b) with respect to Claim 2, the recording or reproducing sector of the disc 11 is based on information on the position of a pickup based on the number of pulses (digital signals) for driving a motor (disk motor) for controlling movement of the pickup in the disc drive (Fig. 2; optical pickup is moved by digital signal).

5. Son teaches a tilt correcting apparatus having all of the elements and means as recited in claims 3 and 4. For example, Son teaches the following:

(a) with respect to Claim 3, a pickup that radiates light onto the disc (Fig. 2); a tilt detector 26 that detects a tilt of the disc using the pickup (Fig. 2); a motor 28 that drives the pickup to correct the tilt of the disc 11; a memory 38 that stores a tilt angle for each of the plurality of recording and reproducing sectors of the disc 11 (Fig. 2); a controller 36 that, if the tilt of the disc is detected, searches the memory for the tilt angle for the recording or reproducing sector of the disc wherein the pickup is currently positioned, and controls driving of the motor using the searched tilt angle (Figs. 2 and 7).

(b) with respect to Claim 4, if the tilt angle is not found in the memory, the controller 36 calculates the tilt angle for the recording or reproducing sector of the disc wherein the pickup is currently positioned based on the tilt of the disc, corrects the tilt of the disc using the calculated tilt angle, and stores the calculated tilt angle in the memory (Fig. 7; steps S706 and S710-S716).

6. Claims 5 and 6 have limitations similar to those treated in the above rejection, and are met by the reference as discussed above. Claim 5 however also recites the following limitation which is also taught by the prior art of Son:

(a) as in claim 5, the pickup moves in a radial direction of the disc (Figs. 2 and 7; steps S704 and S706).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 7 and 8 are rejected under 35 U.S.C. 103 (a) as being unpatentable over by Son et al. (U.S. Patent 6,42,674) in view of Nishiwaki (U.S. Patent 6,704,254).

Son teaches a tilt correcting apparatus very similar to that of the present invention as recited in claims 7 and 8. For example, Son teaches the following:

(a) with respect to Claim 7, detecting a tilt of a disc 11 loaded in the disc drive (Figs. 2 and 7, steps S710); searching a memory 38 in the disc drive for a tilt angle for a recording or reproducing sector of the disc in

which the tilt is detected (Figs. 2 and 7, step S712; column 7, lines 22-26); calculating (by interpolation) a tilt angle for the recording or reproducing sector based on the detected tilt of the disc if no tilt angle is found in the memory 38 (Fig. 7, step S714; column 7, lines 31-33); correcting the tilt of the disc (Fig. 7, step S716); storing the calculated tilt angle in the memory so that the calculated tilt angle is used for the recording or reproducing sector (Fig. 7, step S712); if a tilt angle is found in the memory 38, the tilt of the disc is corrected using the found tilt angle, and if the tilt angle is not found in the memory 38, the tilt of the disc is corrected using the calculated (interpolated) tilt angle (Fig. 7, steps S710-S716).

However, Son does not teach the following:

(a) with respect to Claim 7, tilt correcting method is implemented by a computer readable encoded with processing instructions (program).

Nishiwaki teaches an optical disk control method where its tilt adjustment is controlled by a program stored in a recording medium (column 17, claim 14).

In order to access compensated values in a tilt correcting operation, a software servo program is more flexible than a hardware device such as a digital signal processing unit. Therefore, when there is a disc servo

control where variables such as tilt correcting values needed to be stored, it would have been obvious to one of ordinary skill in the art to implement the tilt servo method such as Son's in form of Nisiwaki's software executable instructions and stored it in Nishiwaki's computer readable recording medium instead of electronic circuits, because the software design cost less and its instructions/steps can be updated or modified.

(b) with respect to claim 8, Son further teaches that the recording or reproducing sector of the disc 11 is based on information on the position of a pickup based on the number of pulses (digital signals) for driving a motor (disk motor) for controlling movement of the pickup in the disc drive (Fig. 2; optical pickup is moved by digital signal).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Furukawa et al. (6,137,754) is pertinent because Furukawa teaches a search method for a tilt correction value in a memory.

Ohmi (6,041,030) is pertinent because Ohmi teaches a tilt control value stored in a memory.

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action

11. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Kim CHU whose telephone number is (571) 272-7585 between 9:30 am to 6:00 pm, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington, can be reached on (571) 272-4483.


The fax number for the organization where this application or proceeding is assigned is (571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9191 (toll free).

Kim-Kwok CHU

Examiner AU2627
November 30, 2006
(571) 272-7585

Re 11/30/2006


ANDREA WELLINGTON
SUPERVISORY PATENT EXAMINER